Listing of Claims

This listing of claims shall replace all prior versions and listings of claims in the application.

Amendments to the Claims

1. (Currently Amended) A composition for controlled temperature induction heating comprising at least one matrix material and ferromagnetic electrically non-conductive hexagonal ferrite particles, wherein the ferrite particles are greater than or equal to about 1 micron in size and have a specific Curie temperature (T_c) in the matrix material and wherein the specific Curie temperature is substantially similar to a processing temperature of the matrix material, and wherein the composition is capable of being heated to the Curie temperature by applying a magnetic field to the composition at a frequency of less than about 30 MHz.

2. (Previously Presented) The composition of claim 1, wherein the ferromagnetic hexagonal ferrite particles are selected from the group consisting of $SrFe_{12}O_{19}$, Me_a-2W, Me_a-2Y, and Me_a-2Z, wherein 2W is $BaO:2Me_aO:8Fe_2O_3$, 2Y is $2(BaO:Me_aO:3Fe_2O_3)$, and 2Z is $3BaO:2Me_aO:12Fe_2O_3$, and wherein Me_a is a divalent cation.

3. (Original) The composition of claim 2, wherein the divalent cation is selected from Mg, Co, Mn and Zn.

4. (Original) The composition of claim 2, wherein the ferromagnetic hexagonal ferrite particles have the $SrFe_{12}O_{19}$, Co-2Y, Mg-2Y, Zn/Co-2Y, or Zn/Mg-2Y or combinations thereof.

5. (Original) The composition of claim 1, wherein the particles are on a surface of the matrix material.

6. (Original) The composition of claim 1, wherein the particles are embedded in the matrix material.

7. (Original) The composition of claim 1, wherein the Curie temperature is from about 100° to 450 °C.

8. (Original) The composition of claim 1, wherein the particles are from about 1 micron to about 840 microns.

9. (Cancelled).

10. (Original) The composition of claim 1, wherein the particles are present from about 1% to about 50% by volume.

11. (Original) The composition of claim 11, wherein the particles are from about 10% to about 30% by volume.

12. (Original) The composition of claim 11, wherein the particles are present from about 15% to about 20% by volume.

13. (Original) The composition of claim 1, wherein the matrix material comprises a thermoplastic material.

14. (Currently Amended) The composition of claim 13, wherein the thermoplastic material comprises poly(etheretherketone), polyetherketoneketone, poly(etherimide), polyphenylene sulfide, poly(sulfone), polyethylene terephthalate, polyester, polyamide, polypropylene, polyurethane, polyphenylene oxide, polycarbonate, polypropylene/polyamide~~/nylon~~, polypropylene/ethylene vinyl alcohol, polyethylene or combinations thereof.

15. (Original) The composition of claim 1, wherein T_c of the particles is less than the melting temperature of the matrix material.

16. (Original) The composition of claim 1, wherein T_c of the particles is greater than the melting temperature of the matrix material.

17. (Currently Amended) A composition for controlled temperature induction comprising a matrix material and magnetically soft electrically non-conductive ferrite particles, wherein the particles are greater than or equal to about 1 micron in size and have a

specific Curie temperature (T_c) in the matrix material and wherein the specific Curie temperature is substantially similar to a processing temperature of the matrix material, and wherein the composition is capable of being heated to the Curie temperature by applying a magnetic field to the composition at a frequency of less than about 30 MHz.

18. (Original) The composition of claim 17, wherein the particles have the composition $1Me_bO:1Fe_2O_3$, where Me_bO is a transition metal oxide.

19. (Previously Amended) The composition of claim 18, wherein the Me_b is selected from Cu, Ni, Co, Mn, and Zn.

20. (Original) The composition of claim 18, wherein the matrix material comprises a thermoplastic material.

21. (Currently Amended) The composition of claim 20, wherein the thermoplastic material comprises poly(etheretherketone), polyetherketoneketone, poly(etherimide), polyphenylene sulfide, poly(sulfone), polyethylene terephthalate, polyester, polyamide, polypropylene, polyurethane, polyphenylene oxide, polycarbonate, polypropylene/polyamide~~/nylon~~, polypropylene/ethylene vinyl alcohol, polyethylene or combinations thereof.

22. (Original) The composition of claim 17, wherein T_c of the particles is less than the melting temperature of the matrix material.

23. (Original) The composition of claim 17, wherein T_c of the particles is greater than the melting temperature of the matrix material.

24. (Original) The composition of claim 17, wherein the particles are selected from (Mn, ZnO) Fe_2O_3 and (Ni, ZnO)Fe_2O_3.

25-77. (Cancelled).

78. (Currently Amended) A composite comprising a matrix and a susceptor included in the matrix for heating the matrix to a desired Curie temperature, wherein the specific Curie temperature is substantially similar to a processing temperature of the matrix material, wherein the susceptor comprises ferromagnetic, hexagonal electrically

non-conductive ferrite particles, wherein the particles are greater than or equal to about 1 micron in size, wherein the particles have ~~having~~ the composition $SrFe_{12}O_{19}$, Me_a-2W, Me_a-2Y, and Me_a-2Z, wherein 2W is $BaO:2Me_aO:8Fe_2O_3$, 2Y is $2(BaO:Me_aO:3Fe_2O_3)$, and 2Z is $3BaO:2Me_aO:12Fe_2O_3$, and wherein Me_a is a divalent cation, or magnetically soft ferrite particles having the composition $1Me_bO:1Fe_2O_3$, where Me_bO is a transition metal oxide, and wherein the composite is capable of being heated to the Curie temperature by applying a magnetic field to the composition at a frequency of less than about 30 MHz.

79. (Previously Cancelled).

80. (Original) The composite of claim 78, wherein the matrix comprises a thermoplastic material.

81. (Currently Amended) The composite of claim 80, wherein the thermoplastic material comprises poly(etheretherketone), polyetherketoneketone, poly(etherimide), polyphenylene sulfide, poly(sulfone), polyethylene terephthalate, polyester, polyamide, polypropylene, polyurethane, polyphenylene oxide, polycarbonate, polypropylene/polyamide~~/nylon~~, polypropylene/ethylene vinyl alcohol, polyethylene or combinations thereof.

82. (Original) The composite of claim 78, wherein Me_a comprises Mg, Co, Mn or Zn and Me_b comprises Ni, Co, Mn, or Zn.

83-101. (Previously Cancelled).

102. (Currently Amended) The composition of claim 2, wherein the ferrite particles are selected from the group consisting of $SrFe_{12}O_{19}$, Co-2Y, and Mg-2Y, ~~Zn/Co-2Y, and Zn/Mg-2Y~~ and wherein zinc is partially substituted for the divalent ions of the ferrite particles.

103. (Previously Presented) The composition of claim 102, wherein zinc is about 15% substituted for the divalent ions of the ferrite particles.

104. (Currently Amended) The composite of claim 78, wherein ferrite particles are selected from the group consisting of $SrFe_{12}O_{19}$, Co-2Y, and Mg-2Y, ~~Zn/Co-2Y,~~

~~and Zn/Mg 2Y~~ and wherein zinc is partially substituted for the divalent ions of the ferrite particles.

105. (Previously Presented) The composite of claim 104, wherein zinc is about 15% substituted for the divalent ions of the ferrite particles.

106. (New) The composition of claim 17, wherein the particles are on a surface of the matrix material.

107. (New) The composition of claim 17, wherein the particles are embedded in the matrix material.

108. (New) The composition of claim 17, wherein the Curie temperature is from about 100° to 450 °C.

109. (New) The composition of claim 17, wherein the particles are from about 1 micron to about 840 microns.

110. (New) The composition of claim 17, wherein the particles are present from about 1% to about 50% by volume.

111. (New) The composition of claim 110, wherein the particles are from about 10% to about 30% by volume.

112. (New) The composition of claim 110, wherein the particles are present from about 15% to about 20% by volume.